




## First record of the Vulnerable Malayan Flat-shelled Turtle, *Notochelys platynota* (Gray 1834) (Reptilia, Testudines, Geoemydidae), in Belitung, Indonesia

VERYL HASAN<sup>1\*</sup>, JOSIE SOUTH<sup>2</sup>

<sup>1</sup> Department of Aquaculture, Faculty of Fisheries and Marine, Airlangga University, Surabaya, Jawa Timur, Indonesia • [veryl.hasan@fpk.unair.ac.id](mailto:veryl.hasan@fpk.unair.ac.id)  <https://orcid.org/0000-0001-5457-9335>

<sup>2</sup> School of Biology, Faculty of Biological Sciences, University of Leeds, Leeds, United Kingdom • [j.south@leeds.ac.uk](mailto:j.south@leeds.ac.uk)  <https://orcid.org/0000-0002-6339-4225>

\* Corresponding author

**Abstract.** The Malayan Flat-shelled Turtle, *Notochelys platynota* (Gray 1834), is a freshwater turtle endemic across Southeast Asia and is categorized as Vulnerable according to the IUCN Red list. We report the first record of this species from Belitung, a remote Island in Indonesia, based on photographs. The new record is approximately 150 km to the east of the nearest locality on Bangka Island, Indonesia. This species was obtained in upstream, slow-flowing waters in forested hills 75 m above sea level.

**Keywords.** Biogeography, distribution range, ecology, freshwater turtle

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### Introduction

Asian freshwater turtles are currently suffering massive regional declines, mostly driven by unsustainable harvesting for the international pet trade and traditional food (Cheung and Dudgeon 2006; Gong et al. 2009). One such species is *Notochelys platynota* (Gray 1834), Malayan Flat-shelled Turtle, which occurs across Southeast Asia. *Notochelys platynota* is a medium-sized geoemydid turtle with a carapace length reaching 33–36 cm (Ernst and Barbour 1989; Brophy and Ernst 2004). This species typically inhabits streams and shallow water in freshwater swamp forest habitats. Adults feed mainly on aquatic vegetation and fallen forest fruits, while juveniles may also consume aquatic invertebrates (Buskirk 1997; Ernst et al. 1989; Cox et al. 1998).

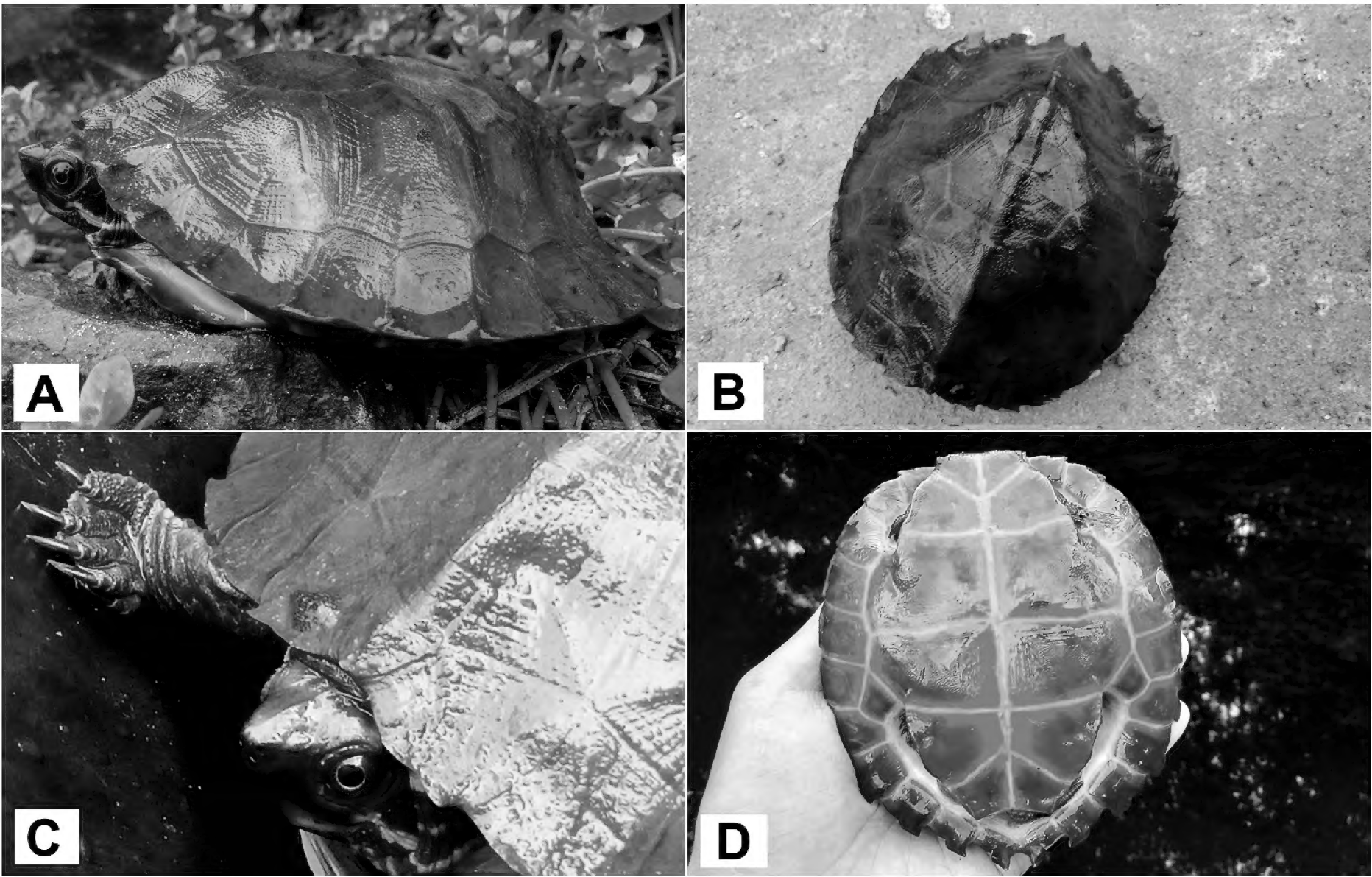
This species has disappeared at localities degraded by many anthropogenic pressures (e.g. urban expansion and development, pollution from residences, agriculture, and industries). In addition, overharvesting for food may be contributing to the reduction of populations and extirpation locally (Jensen and Das 2008).

Fishers often use turtle traps in slow flowing stream habitats where this species usually occurs (Moll and Khan 1990; Shahirah-Ibrahim et al. 2018). Due to the combination of these factors, *N. platynota* has been assessed as Vulnerable in accordance to IUCN criteria (Kusrina et al. 2021).

The global distribution of this species includes Myanmar, Thailand, Vietnam, Peninsular Malaysia, Singapore, Borneo, Brunei Darussalam, and several parts of Indonesia such as Sumatra, Bangka Island, Kalimantan, and eastern Java (Iskandar 2000; Kusrini et al. 2021). During a recent field expedition (2023), photographic evidence was recorded of *N. platynota* from Belitung Island, a remote island, east of Bangka Island. The new record is approximately 150 km to the east of the nearest locality in Bangka Island, Indonesia.

### Methods

A live specimen of *Notochelys platynota* (Fig. 1) was obtained from local fishermen during fieldwork carried out on 5 February 2023 in the Lenggang River



**Figure 1.** *Notochelys platynota* from Lenggang River, East Belitung District, Belitung Island, Indonesia. **A.** lateral view of carapace. **B.** View of carapace. **C.** View of head. **D.** View of plastron. (Photographs by I. Wijaya.)

(02°54'41"S, 108°06'11"E), Simpang Renggang subdistrict, East Belitung District, Bangka Belitung Province, Indonesia (Figs. 2, 3). The collection site is characterized by having slow water flow and abundant vegetation on the banks of the river (Fig. 3). The topography is forested hills at 75 m above sea level. This area is under the management of Protected Forest of Gunung Duren, Bangka Belitung Province. Due to the area being part of a Protected Forest, collection of rare species specimens is prohibited, unless special permits are obtained, and, as we did not have a permit for collecting *N. platynota* during our fieldwork, no voucher specimens were retained. Furthermore, release of the individual was preferable due to the small population and vulnerable status due to slow growth and reproduction.

The morphological inspection of the specimen followed de Rooij (1915), complemented by photographs of the life specimen which were taken immediately after capture to document coloration pattern in life.

Results

*Notochelys platynota* (Gray 1834)

Figure 1, Table 1

**New records.** INDONESIA – **Belitung Island** • East Belitung District, upstream of the Lenggang River; 02°54'41"S, 108°06'11"E, 5.II.2023; V. Hasan obs.; turtle trap; 1 young, sex undetermined; individual photographed but not collected.

**Identification.** The specimen collected in the Lenggang River was identified as a young *N. platynota* (Fig. 1)

based on characters proposed by de Rooij (1915). Carapace depressed, angular, with an obtuse, interrupted keel, flat on the vertebral region; posterior margin serrated; six vertebral shields; head covered with smooth skin and small shields on its posterior part; upper jaw hooked, bicuspid; fore limb with broad band-like shields anteriorly; digits webbed, claws long, curved, five on the fore limb, four on the hind limb; tail short. Coloration in life specimen: carapace reddish brown with radiating brown lines; two round black spots on each vertebral and costal shield; plastron yellow, brown-spotted or brown with yellow sutures; head yellowish brown; neck brown with yellow streaks, one beginning at the posterior corner of the eye.

Morphometric characters of the *N. platynota* from Belitung Island are listed in Table 1.

Discussion

The discovery of *Notochelys platynota* in the Lenggang

**Table 1.** Morphometric measurement of *Notochelys platynota* from Belitung Island, Indonesia (*n* = 1 specimen).

Characters	Morphometrics data (mm)
Carapace Arch Length	248
Carapace Arch Width	214
Head Length	57
Plastron Curve Length	195
Tail Length	64
Plastron Curve Width	165





**Figure 2.** Lenggang River River, location where *Notochelys platynota* found in Belitung Island, Indonesia. (Photograph by F. Yusnandar.)

River (Fig. 2), East Belitung District is the first confirmed record of this species for the island. It represents a range extension of approximately 150 km to the east of Bangka Island as its nearest locality (Fig. 3). The presence of multiple populations across a fragmented geographic range suggests that the conservation status for *N. platynota* should be reassessed and further research be completed to determine population abundance and distribution on Belitung Island. The condition of the upstream Lenggang River is overgrown with many aquatic plants. This location is far from settlements, plantations, and mining and is suitable habitat for *N. platynota* (Ernst et al. 1989; Cox et al. 1998). Furthermore, the status of the population on Belitung should be determined to establish a baseline for monitoring purposes.

Previous assertions of biogeographic origin and evolution of freshwater turtles in Southeast Asia should be reassessed, however, to do so requires accurate occurrence data throughout the understudied freshwater systems of Southeast Asia. The vulnerable categorization by the IUCN is based on the known populations and ranges of *N. platynota*. Conservation initiatives would greatly benefit from better knowledge on the full range and distribution of this species, including molecular data in order to understand population dynamics within restricted populations. These data would allow more tailored conservation initiatives which account for biogeographic processes in island systems (Kusumah et al. 2023).

Given the broad decline of Asian freshwater turtle species, determining and confirming new records of vulnerable freshwater turtles is an essential contribution to correctly understand species diversity trends and patterns of biogeography (Ernst and Barbour 2000; Nguyen et al. 2018). There is limited ecological information available for *N. platynota*, and what

is available is rather general across its known range. A sound understanding of ecological requirements is necessary to develop policy and legislation to protect the species from threats (Ernst et al. 2000). Urgent action is required to fully assess *N. platynota* and other overlooked Indonesian freshwater turtle species.

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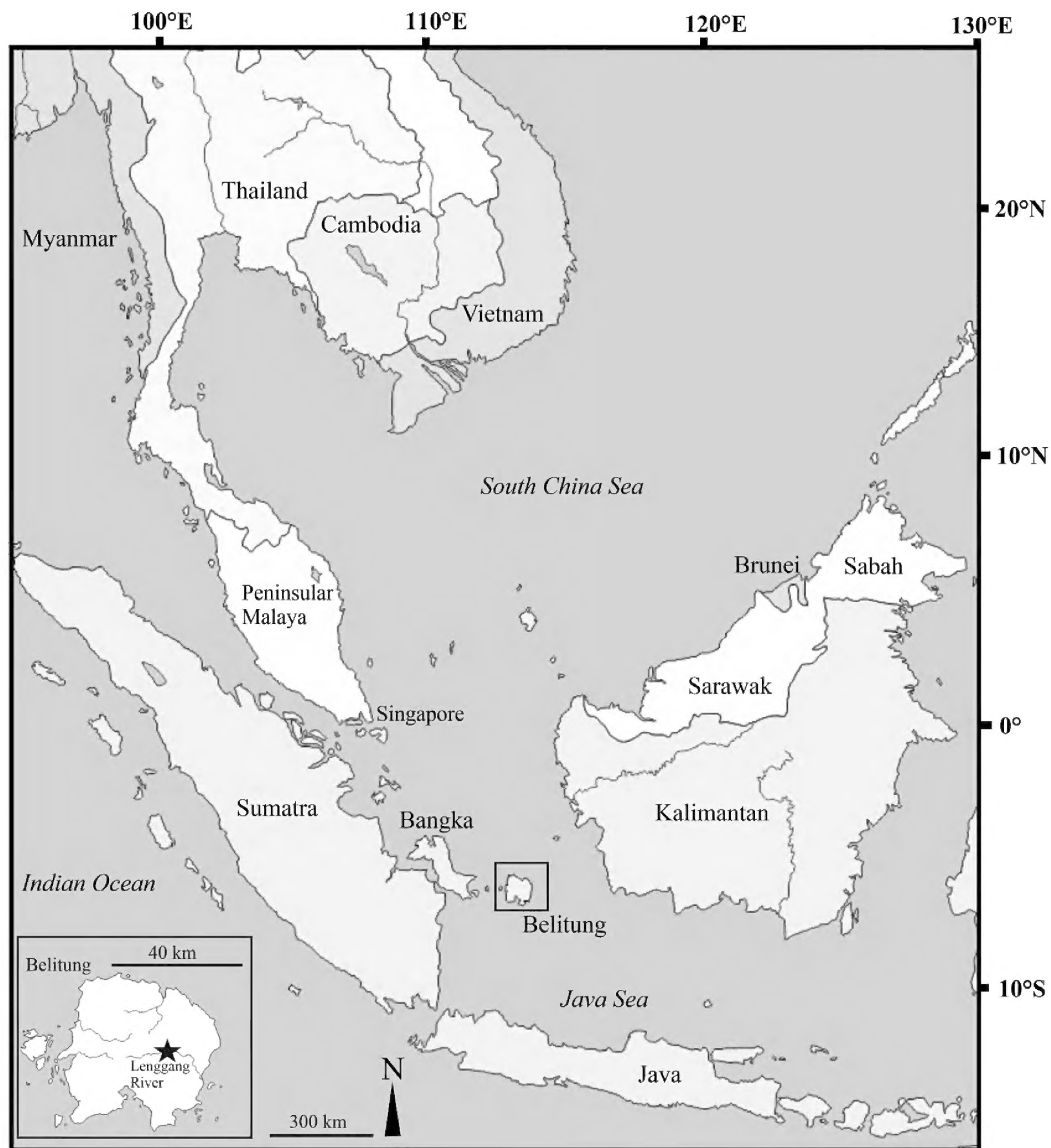
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## Author Contributions

Conceptualization: VH. Data curation: JS, VH. Formal analysis: JS. Funding acquisition: VH. Investigation: VH. Methodology: JS, VH. Project administration: VH. Validation: JS. Visualization: JS. Writing – original draft: VH. Writing – review and editing: JS.

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**Figure 3.** Distribution map of *Notochelys platynota*. The black star indicates the new record from Belitung Island, Indonesia; Myanmar, Cambodia, Vietnam, Peninsular Malaysia, Singapore, Sarawak, Brunei, Sabah, Kalimantan, Sumatra, Java, and Bangka Island indicate previous records based on Iskandar (2000) and Kusrini et al. (2021).

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